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1 GENERAL INFORMATION FOR THE HM35 SERIES

This user's manual describes the standard functions of the HM35 series of vehicular transceivers, available in different versions which vary according to frequency band.
HM35 is a robust vehicular radio "SYSTEM" equipped with highly advanced functions that have been designed for ease of use and flexibility for various needs, thanks to "Flash EEProm" technology.
Specifications of HM35's transceiver are compatible with ETS 300-086 and ETS 300-113; as well, HM35's highly advanced design and resistance conform to IEC529 level IP54 and to MIL STD 810 C, D, E and F.

- *The manufacturers, in their effort to constantly improve product quality, reserve the right to change specifications without forewarning.*
- *The functions available to the user vary depending on the radio's programming.*
- **Use of this transceiver is subject to authorization from the appropriate local authority.**

2 ABOVE ALL... SAFETY!

2.1 Conventions and Symbols Used in This Manual

- *Notes such as this one indicate practical advice that we recommend following for simplified use of the device, and for optimal performance.*
- **Warning symbols such as this one indicate a crucial description for avoiding serious inconvenience, possible damage to the device, and potential danger to yourself or other persons.**
- The names of buttons and keys are written in **bold**.
- Messages that appear on the display (e.g., names of menus and sub-menus) are shown in **`this font`** (courier new).
- Sentences and important words are written in italics.

2.2 Warnings

- **Writing of this manual has been completed with the intention of supplying comprehensive, precise and up-to-date information. CTE International will not assume responsibility for errors outside their control. Furthermore, the manufacturer does not guarantee modifications to the device that are carried out by unauthorized persons, or faulty installations which influence the applicability of the information in this manual.**
- **The reliability of the information provided in this manual is understood to allow for possible errors and omissions, and refers to the software version available at the time of printing.**
- **Use of this transceiver is subject to applicable local regulations, as well as to the use of good sense. When questions**

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regarding its operation arise, please contact your vendor or a CTE International authorized service centre before using the transceiver.

2.3 Security

Your portable ALAN HM35 transceiver is designed to give you maximum security and reliability. As with all electrical devices, basic precautions should be followed in order to avoid damage to other objects or to people - including yourself and your radio. Please see the following precautions:

2.3.a General precautions

- This device is to be used solely as an aid to work performance. Its settings may be affected by different factors, such as defects or malfunction of the device, environmental conditions, or improper use.
- It is important to read – and follow – all of the warning labels and instructions placed on the device and its accessories.
- Do not open the transceiver for any reason, or attempt to repair it (with the exception of the routine maintenance described in this manual). Unauthorized opening of the transceiver will nullify the warranty, and may cause damage which requires drastic repair work. Please contact your local vendor for assistance.
- Do not let your radio get wet. If the transceiver happens to get wet, dry it as soon as possible with a soft, clean cloth. If you think liquid may have penetrated HM35's housing, see your authorized service centre as soon as possible.
- Only use original accessories; anything else may seriously damage your transceiver.
- Turn off your radio before cleaning it. For cleaning, follow the instructions outlined in Chapt. 11.
- Pay attention to environmental conditions. Your radio was designed to be used in extreme environmental conditions, though excessive heat or cold should be avoided (outside the values of the specifications outlined in Chapt. 14).

2.3.b Operating conditions/usage

- Do not use the radio when driving. Driving regulations expressly prohibit the use of transceivers by drivers while the vehicle is in motion.
- Do not operate the radio near shieldless explosives or in potentially explosive environments (e.g., in the vicinity of gas stations). A single spark may cause an explosion.
- Do not approach the transceiver's antenna during transmission. The radio functions at optimum levels when the microphone is held at a distance of 5 to 10cm from the mouth, and when the antenna is installed at the centre of the roof, in a vertical position and free from obstacles.

2.3.c Installation

- Installation and removal of the radio should be carried out only by experienced technicians. The information found in this manual are meant solely as a complement to the experience held by the technician, who should assume full responsibility for the installation.
- This transceiver generates and irradiates electromagnetic energy

(EME) at radio frequency (RF), and as such must be installed and placed in operating conditions that are in conformity with the instructions contained in this manual and with current regulations. Failure to follow these instructions can cause personal injury and/or serious malfunction of the device.

- It is very important to follow the requirements relative to the prevention of radio frequency exposure. Unauthorized changes or modifications to this device may invalidate conformity to regulations. All changes or modifications to the radio must be approved in writing by the manufacturer.
- Ensure that your power supply corresponds to the values cited in this manual. In case of doubt, contact your local vendor.
  This product conforms to requirements of the Council Directives 89/336/EEC and 73/23/EEC regarding the acknowledgement of the laws of the Member States, and relating to electromagnetic compatibility and low voltage, as well as to the automotive regulation CE95/54.

2.4 Assistance

We urge you to write the serial number of your transceiver in the space provided below. This number is found on the transceiver's identifying label. This number will be useful in the event of repair/assistance and/or loss and/or theft of the device.

Serial number_____

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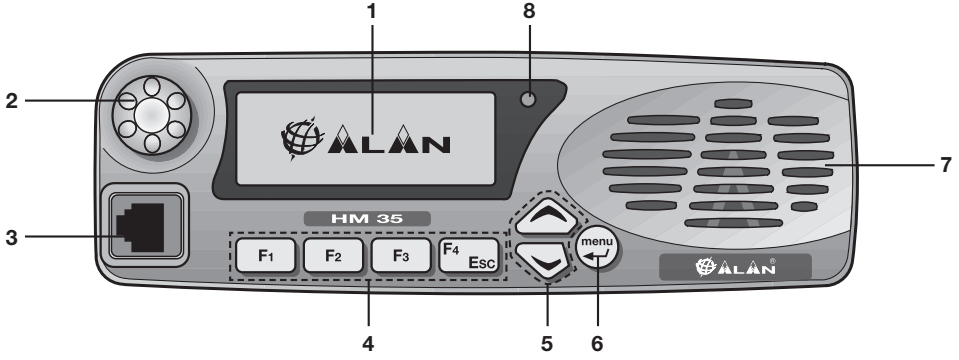
3 PARTS OF THE RADIO AND THEIR USE

3.1 Front panel



[1] **Display** - constantly displays the operating status of the device and guides the use of various functions through a series of icons and messages.

[2] **On/Off-Volume** knob – used for turning the radio on/off and for adjustment of reception volume.

[3] **Microphone** socket – this RJ type socket connects the standard hand-held (MK06/35) or keypad microphone (MK06/35-K) to the radio.

[4] Programmable function keys **F1, F2, F3** and **F4/ESC** enable the user to recall commonly used functions or can be programmed with fixed selective calls.
The **F4/ESC** button is also used for exiting a menu (ESC).

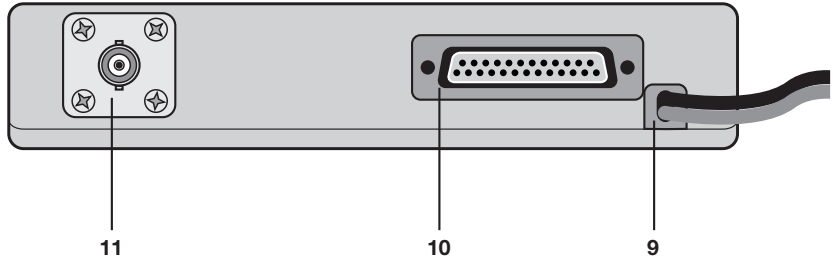
[5] (up)/ (down) buttons – for channel selection and navigation of the command menu.

[6] button – for accessing the command menu and confirming the option shown on the display.

[7] **Internal speaker.**

[8] **Status LED** – is lit with different colours to indicate the radio's status (transmission, busy channel, etc.)

3.2 Rear panel



[9] **Power cable** – this red/black cable connects to a 13.8 Vdc power source (red is positive and black is negative), for example to the vehicle battery.

[10] **Input/output connector** – for connection to the external speaker and for activation of external devices. For connections, refer to Par. 13.1.

[11] **Antenna socket** - this SO 239 (UHF) socket is for connecting a suitable antenna. Another option is to use a BNC-type connector. For further details, please contact your local vendor.

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4 CHECKING THE PARTS

4.1. Package contents

(a) Transceiver
(b) Power cable
(c) Vehicle bracket with screws and knobs for mounting
(d) Mounting piece for microphone, with screws
(e) User's manual (this manual!)

Depending on the model, some parts may already be attached/ connected to the device. If any parts are missing or damaged, contact your vendor as soon as possible.

4.2. Hand-held microphone

IMPORTANT! The microphone is ordered separately, and can be one of the following two types:

- **Standard microphone MK06/35** – microphone for general use, with push-to-talk transmission button (PTT).

- **Keypad microphone MK06/35-K** – includes standard microphone functions, plus variable selective calling (if activated during programming).

Both microphones support the monitor function activation when the microphone is removed from its mount. For further details, refer to par. 5.1.c.

5 ADVICE FOR INSTALLATION

- **WARNING! Installation of this device must be performed by qualified persons who are equipped with the proper tools. The information provided below are designed solely as a complement to the experience held by the technician, who should assume full responsibility for the installation. Incorrectly installing the transceiver may seriously damage the device or cause damage to people or property. Follow all of the instructions found in this chapter and in Chapt. 2.**
- **Installation must be in conformity with the regulations of the vehicle manufacturer. For questions or doubts regarding this conformity (e.g., holes, the drawing of power, cable passages, etc.), contact your vehicle manufacturer's service centre.**
- **As with all electrical devices, this radio requires a periodic laboratory check-up, otherwise its performance cannot be guaranteed. For further details, contact the administrator of your radio network or the CTE International technical office.**

5.1 Location/mounting of radio parts

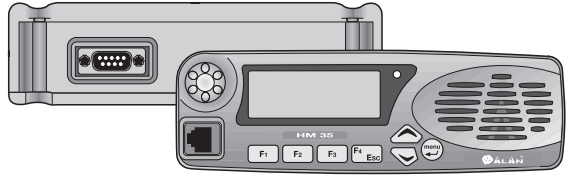
5.1.a Transceiver

Select a location for the radio that is easily accessible to the operator, keeping in mind the security conditions outlined in Chapt. 2. Use the bracket and screws included in the package to mount the radio.

5.1.b Detachable front panel

In order to reduce obstruction in the driver/passenger area, the detachable front panel can be installed on the dashboard, using the proper optional kit.

For separation and mounting of the front panel, refer to the instructions found in the kit.



5.1.c Hand-held microphone mount

The mount provided (mod. R14053) is to be used as a storage place for the microphone when the radio is inactive.

An option available to the user is the monitor function (hang-up), which is automatically activated when the microphone is removed from its mount.

For further details regarding the monitor function, refer to par. 6.6.

Microphone installation:

1) Fix the bracket in a position close to the front panel of the radio and near to the radio operator.
2) If you wish to activate the monitor function when removing the microphone from its bracket (hang-up), connect this to the negative (ground) of the vehicle.

- **Place the bracket in a location which makes the microphone cable not taut and avoid that possible rocking of the microphone could cause it hitting the vehicle's parts or surrounding objects and get damaged. As well, avoid placing the microphone in a location where surrounding objects may**

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cause accidental activation of the push to talk (PTT) button and therefore transmission.

Neither the standard (MK06/35) nor the keyboard (MK06/35-K) microphones are supplied with the radio; however, installation of the mount is the same for both. For further details, refer to par. 4.1.b.

5.2 Installation of the vehicular antenna

Install the antenna on the exterior of the vehicle. Installation must be in conformity with the regulations of the antenna manufacturer, and according to the instructions included with the antenna. Installation must also be in conformity with general security and local regulations, as well as with those indicated in Chapt. 2.

Contact your vendor for advice on choosing the best antenna for your needs. The antenna must be able to irradiate at least the nominal power of the radio. Once installed and calibrated, the antenna must have a SWR (Standing Wave Ratio) as low as possible and at below 1:1.5. SWR should be measured with a suitable instrument once the antenna is completely installed in an open space.

When used in a vehicle, the radio offers optimal performance when the antenna is installed at the centre of the roof, in a vertical position that is free of obstacles.

5.3 Connections

A faulty connection (or connection with an unapproved device) can seriously damage the transceiver, as well as people or objects. For further details, refer to the service manual and/or to the CTE International technical office.

5.3.a Antenna

After verifying the efficiency of the external antenna, connect it to the radio's **Antenna** socket (refer to par. 5.2) using a suitable connector.

5.3.b Power supply

Connect the red/black cable to a 13.8 VDC (+/- 10%) power source. The red terminal connects to the positive; the black is negative and must be grounded. It is important to verify that the power supply line used is able to support 10 A of continuous current.

5.3.c Connection/Disconnection of the microphone

As previously mentioned, two types of microphones are available for purchase separately:

- **Standard microphone MK06/35** – microphone for general use, with push to talk transmission button (PTT) (not supplied).
- **Keypad microphone MK06/35-K** – includes standard microphone functions, plus variable selective calling (if activated during programming).

Standard microphone

To connect the microphone, insert the microphone's RJ plug into the [3] **Microphone** socket on the front panel of the radio. To disconnect the microphone, hold down the safety clip on the RJ plug and detach it from the socket with caution.

Keypad microphone

The keypad microphone MK06/35-K can only be used if the radio has been programmed for its activation, as per the following instructions. If it has not been programmed, the command described below will

not be accessible.

1) Press the menu button to access the command menu, then press the ▲ ▼ buttons repeatedly until the **Lcd&Keypad** menu is highlighted.
2) Press the menu again to view the available sub-menus.
3) Press the ▲ or ▼ button repeatedly until the **Keypad Micr.** sub-menu is highlighted, then press menu to confirm. A ✓ will appear beside the sub-menu to indicate that the keypad microphone is active.
4) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

This procedure should be followed the first time you use your microphone. If you are using the standard microphone, ensure the ✓ is disabled by following the above procedure.

To connect/disconnect the MK06/35-K keypad microphone, follow the same procedure as described for the standard microphone.

5.3.d External speaker (optional)

If you possess an external speaker, connect it to the **Input/Output** [10] connector found on the rear panel of the device, referring to Chapt. 13 and to the instructions supplied with the speaker itself. The external speaker must be 8 Ohm and able to support a minimum of 12 W of power.

The output of the external speaker is grounded. Be careful not to create short-circuits with the body of the vehicle.

The transceiver can be programmed so the external speaker is excluded and only the internal one is used. For further details, refer to par. 8.4.

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6 BASIC OPERATIONS

IMPORTANT! One or more functions among those described from this point onwards can be rendered inactive by your radio network administrator, and depending on the radio's programming. For this reason, you may find you are not able to access one or more of the functions, or that some functions may differ from the below descriptions.
Furthermore, it is possible that one or more functions can be activated via the function keys F1, F2, F3 or F4/ESC, rather than via the normal command menu. In this situation, you will see the (abbreviated) function written directly above the button to which the function has been assigned (in other words, on the bottom part of the display).
For further details or when in doubt, contact your vendor/radio network administrator. For information regarding the use of menu commands and function keys, refer to Chapt. 7.

6.1 Turning HM35 on/off

To turn on the radio, turn the **On/Off-Volume** knob clockwise until you hear a click.
A welcome message, including the version of software currently installed, will appear on the display.
The radio will automatically carry out a self-test, and will emit a beep to confirm start-up.
To turn off the radio, turn the **On/Off-Volume** knob counter-clockwise until you hear a click and the display turns off.

6.2 Volume adjustment

To increase volume, turn the **On/Off-Volume** knob clockwise.
To decrease volume, turn the knob counter-clockwise.

6.3 Channel selection

To select a channel, press the ⌒ button to scroll through channels upwards or ⌣ to scroll downwards.

6.4 Reception

There are three reception modes:

- **Open traffic** – this mode allows the user to listen to all communication transmitted on the selected channel and volume.
- **CTCSS/DCS** - if programmed, allows the user to listen only to communication coming from other members of the network with the same CTCSS/DCS tone/code. For further details, refer to Chapt. 9.
- **Selective call** - allows the user to send and receive calls from a user or group.

When you receive a valid selective call, the status LED will flash orange and an audio signal will alert you to the incoming call. For further details, refer to Chapt. 9.

CTCSS/DCS and Selective Call may be combined together.

CTCSS/DCS and Selective call allow for sharing of the same frequency on multiple radio networks.

6.5 Squelch adjustment

Your transceiver is equipped with a device able to suppress back-

ground noise when no signal is being picked up. You can regulate the threshold of device activation.

1) Press the button to access the command menu, then use the buttons to highlight the **`Radio Param`** option.
2) Press the button once more to view the available sub-menus, then until the sub-menu **`Squelch`** (adjustment of squelch levels) is highlighted.
3) Press to access the sub-menu. **`SQUELCH`** will appear on the display, and a horizontal bar will show the level of squelch intervention currently being used.
4) Hold down the button until the background noise is continuous.
5) Now press the button to gradually increase the level of squelch intervention, stopping as soon as the noise disappears.
6) Wait for a few seconds to ensure the noise has disappeared stably.
7) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

Be careful not to set the squelch level too high: you may not be able to receive weak signals.

6.6 Monitor

The monitor function is mainly used for two purposes:

- To allow for reception of extremely weak signals.
- To temporarily disable the CTCSS/DCS and/or selective calling to allow you to listen to all communications on the tuned channel, including those outside your network.

Each time the monitor function is activated, will appear on the display.

6.6.a Monitor from the menu

1) Press the button to access the command menu, then use the buttons to highlight **`Radio Param`** (radio parameters) from the menu.
2) Press to view the sub-menus available and until the **`Monitor`** sub-menu is high lighted.
3) Press to insert beside **`Monitor`**. This indicates that the monitor function is active.
4) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

6.6.b Monitor using the microphone

If the monitor function has been activated (hang-up), you will activate it each time you remove the microphone from its mount.

6.7 Transmission

1) Remove the microphone from its mount.
2) Ensure the channel is unoccupied (otherwise you will create interference), and verify the status LED is off or flashing orange.
3) Hold down the push to talk (**PTT**) button on the hand-held microphone. The status **LED** [8] to the right of the display will light up in red to confirm that you are transmitting.
4) Speak in a normal voice approximately 5 – 10 cm from the microphone.
5) Release the **PTT** at the end of the call, ensuring the status LED is no longer lit.
6) At the end of the conversation, hang the microphone back up on

its mount.

- *Begin speaking only after having pressed the **PTT** button and do not release it until you have finished speaking, otherwise all or part of your message will not be transmitted.*
- *Do not yell! This does not increase the distance of transmission; rather, your words come across as distorted.*
- *Normally, a transceiver will not allow you to send and receive simultaneously, so when you are speaking, others will not be able to do so. Send your message within a reasonable time period so as not to occupy the channel for very long.*
- *Consult the following paragraphs for information on correct transmission.*

6.7.a Time Out Timer (TOT)

The radio can be programmed with an internal TOT (Time Out Timer), which automatically forces your radio into reception mode if you have been speaking for too long (time for this is determined in the programming phase). If this happens, release the transmission button and wait for a few seconds: the transmission functions of the radio will be automatically restored. For further information, contact your vendor or network administrator.

6.7.b Busy Channel Lock Out (BCLO)

Activation of this function impedes the use of the **PTT** button when the channel is busy.

Depending on the programming, the BCLO can act when it picks up any signal, or when a signal is coming from a specific CTCSS/DCS signal.

- *This setting is not available by the end user. For further details, please contact your radio network administrator.*

6.7.c Selecting transmission power

Your transceiver can transmit with two different power levels, which are predefined during programming, channel by channel. The display will always show the power selected, using the following icons:

- ■ - high power
- ▬ - low power

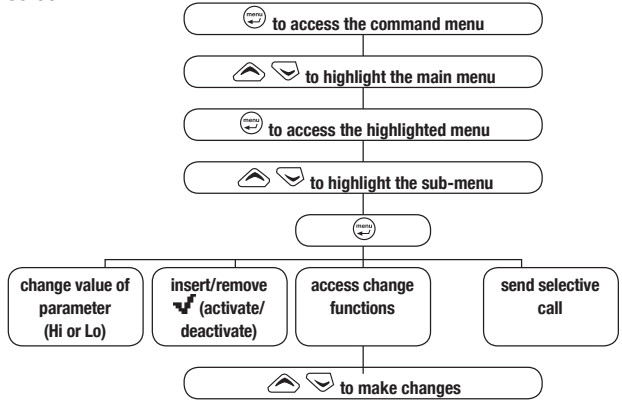
1) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Radio Param`** option.
2) Press menu to view the available sub-menus.
3) Press the ▲ ▼ buttons until the sub-menu **`Power`** is highlighted. The display will show the power level currently selected: **`Hi`** (high power) or **`Lo`** (low power).
4) Press menu to select the desired power level.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

7 USE OF COMMANDS/OPTIONS

7.1 How to navigate the command menu

Refer to the following diagram.

1) Pressing the menu button once opens the command menu and displays the five main menus:
   - **`Radio Param`** – settings/activation of primary radio parameters
   - **`Calls`** – emission of selective calls
   - **`Scan`** – performs scanning functions
   - **`Home Chan`** – recall of home channel (your most frequently used channel)
   - **`LCD&Keypad`** – settings for display and keypad
   - **`Switches`** – activates switching for various options
2) Press the ▲ ▼ buttons to scroll through main menus and highlight the desired menu.
3) Press the menu button to access the menu and view the available sub-menus.
4) Press ▲ ▼ again to scroll through the sub-menus and highlight the desired one:
   - If you have selected an adjustment (e.g. squelch level), press the menu button to access the sub-menu and use the ▲ ▼ to make changes.
   - If you have selected an option with two values (e.g. high or low output power), you can switch from one value to another by pressing the menu button.
   - If you have selected an option (activate or deactivate), a ✓ will appear on the display when the option is activated. Insert/remove the ✓ symbol by pressing the menu button.
   - If you have selected a selective call, begin transmission by pressing the menu button.
5) If necessary, confirm the change once more with the menu button (e.g. in the case of variable selective calls)
6) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.


to access the command menu
to highlight the main menu
to access the highlighted menu
to highlight the sub-menu
change value of parameter (Hi or Lo)
insert/remove ✓ (activate/ deactivate)
access change functions
send selective call
to make changes

You can exit the menu/sub-menu at any time, without changing settings, by pressing the **F4/ESC** *button.*

The main menu **`Home Chan`** *has a sole purpose of recalling the priority channel; therefore, it does not have a sub-menu.*

English

7.2 Summary table for the command menu

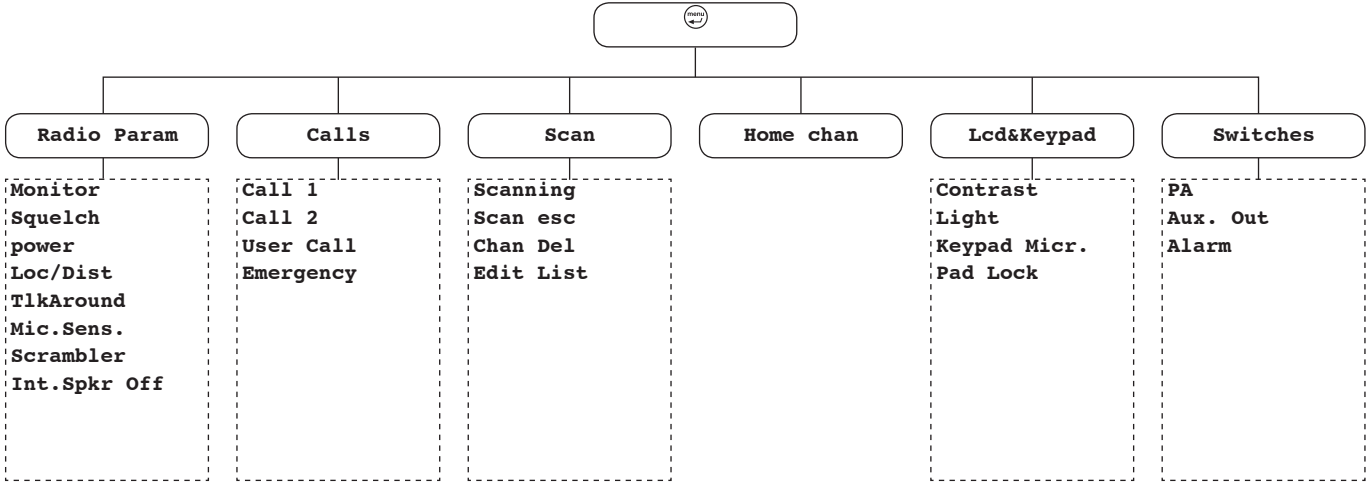
The following table summarizes the functions of each sub-menu/setting available on your radio.
Each sub-menu/setting will be explained in detail, and its location can be found by referring to the last column of this table.

SUMMARY TABLE FOR COMMAND MENU				
Main Menu	**Sub-menu**	**Brief Description**	**Type of command or Value available**	**Par.**
Radio Param	**Monitor**	Temporary exclusion Squelch/CTCSS/selective calling	✓ if monitor is activated	**6.6**
	Squelch	Squelch regulation (suppression of background noise in standby)	Bar indicator	**6.5**
	Power	Output power setting	**Hi** (high) / **Lo** (low)	**6.7.c**
	Lock/Dist	Reception sensitivity attenuator	**L** (activated) / **D** (deactivated)	**10.4**
	TlkAround	Allows for single-frequency communication at repeater output (in case of breakdown)	✓ if Talk Around is activated	**10.5**
	Mic.Sens.	Regulation of microphone sensitivity	**Lo** (low) / **Hi** (high)	**8.1**
	Scrambler	Activation of optional scrambler board (if installed)	✓ if the scrambler is activated	**10.6**
	Int.Spkr Off	Deactivation of internal speaker	✓ if the speaker is deactivated	**8.4**
Calls	**Call 1**	Send fixed selective call - **Call 1**	Press menu to send immediately	**9.2.b**
	Call 2	Send fixed selective call - **Call 2**	Press menu to send immediately	**9.2.b**
	User Call	Send variable user-defined selective call	Typing variable digits on the keypad microphone	**9.2.c**
	Emergency	Send **Emergency** selective call	Press menu to send immediately	**9.2.d**

Scan	**Scanning**	Start scanning (searches for signals on programmed channels)	Press (menu) to start immediately	**10.1.a**
	Scan Esc	Temporary pause in scanning	Immediate pause	**10.1.c**
	Chan Del	Temporary exclusion of one or more channels from scanning	Immediate exclusion with (menu) – **Chan Del**	**10.1.b**
	Edit List	Modification of scanning list and of priority channel	Modified using the function keys	**10.1.d**
Home Chan	Rapid recall of most commonly used channel		Immediate activation (no sub-menus)	**10.2**
Lcd&Keypad	**Contrast**	Adjustment of display contrast	Bar indicator	**8.2**
	Light	Display backlighting	**On** = activated, **Auto** = automatic, and **Off** = deactivated)	**8.3**
	Keypad Micr.	Activation of microphone with keypad MK06/35-K	✓ if MK06/35-K activated	**5.3.c**
	Pad Lock	Lock keypad microphone MK06/35-K	✓ if keypad is locked	**10.3**
Switches	**PA**	Activation of audio amplifier with external speaker	✓ if PA is activated	**10.7**
	Aux.Out	Activation of auxiliary output switching	✓ if contact is activated	**10.8**
	Alarm	Activation of rear output connector upon reception of a valid selective call	✓ if alarm is activated	**10.9**

- *The main menu* **Home Chan** *has a sole purpose of recalling the priority channel; therefore, it does not have a sub-menu.*
- *During the programming phase, one or more sub-menus may have been disabled and therefore not accessible. Contact your radio network administrator for further information.*
- *Some functions or sub-menus may have been assigned to the* **F1, F2, F3**, *and* **F4/ESC** *function keys. Contact your radio network administrator for further information.*

7.3 Menu diagram



7.4 Meanings of display icons

Icon	Meaning	Par.
	Monitor is activated	**6.6**
	Signal received contains correct CTCSS/DSC	**9.1**
	Signal received contains a valid selective call	**9.1**
	Scanning of active channels	**10.1.a**
	Scanning is temporarily paused	**10.1.c**
	Home channel was called	**10.2**
	Lock on keypad microphone MK06/35-K is activated	**10.3**
	Talk Around function is activated	**10.5**

Icon	Meaning	Par.
	Scrambler activated	**10.6**
	PA activated	**10.7**
	Auxiliary output is activated	**10.8**
	External alarm is activated	**10.9**
	High transmission power	**6.7.c**
	Low transmission power	**6.7.c**
	Receiver sensitivity attenuator deactivated (Distant) – maximum sensitivity of receiver	**10.4**
	Receiver sensitivity attenuator activated (Local) – reduced sensitivity of receiver	**10.4**

English

English

7.5 Meaning of function key icons

Icon	Meaning
call1	Sends fixed selective call - **Call 1**
call2	Sends fixed selective call - **Call 2**
call*	Send variable user-defined selective call
mon	Monitor is activated
alarm	Alarm is activated
scan	Starts scan
sc.esc	Interrupts scan
sc.list	Shows the scan list
P.A.	Activates PA function (public address)
talka	Activates talk around function
scram	Activates scrambler
	Locks the keypad of the keypad mike (MK06/35-K)
sql	Activates the regulation of squelch level
	Adjusts contrast
	Adjusts brightness
aux	Activates auxiliary output
ch.	Sends a call to the priority channel
l/d	Activates/deactivates local/distance mode
mic.s.	Adjusts microphone sensitivity
PWR.	Selects Hi/Lo power
	Key not assigned
chdel	Deletes a channel from the scan list
chadd	Inserts a channel in the scan list
emer	Sends an emergency call
k.pad	Activates the MK06/35-K mike
sh.mss	Displays the predefined messages
ABook	Agenda
InBox	Inbox call queue

8 CUSTOMIZATION

This section describes the settings that regulate various parameters, depending on environment and specific use of the radio; for example, display contrast, backlighting, etc.

8.1 Adjustment of microphone sensitivity

Normally, the sensitivity of the microphone allows the user to speak at a distance of up to 10 centimetres from the microphone. However, if the surroundings or the vehicle in which you are working is particularly noisy, you can reduce the sensitivity of the microphone so as to avoid transmitting your surrounding noises to others. When the sensitivity is decreased, you need to speak closer to the microphone and/or with a louder voice, but your message will still be heard clearly. To adjust the microphone sensitivity:

1) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Radio Param`** option.
2) Press menu to view the sub-menus available.
3) Press the ▲ ▼ buttons until the **`Mic. Sens.`** (microphone sensitivity) sub-menu is highlighted. The display will show **`Lo`** (low sensitivity) or **`Hi`** (high).
4) Press menu if you wish to change the setting from **`Lo`** to **`Hi`** or vice-versa.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

8.2 Adjustment of display contrast

Depending on your ambiental light and temperature, you may wish to change the display contrast in order to better view the screen. To change the contrast:

1) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Lcd&Keypad`** option.
2) Press menu to view the sub-menus available.
3) Press the ▲ ▼ buttons until the **`Contrast`** (adjustment of display contrast) sub-menu is highlighted, then press menu to enter the setting. **`CONTRAST`** will appear on the display, and will show a series of horizontal bars proportional to the contrast currently selected.
4) Press the ▲ or ▼ buttons repeatedly until the desired contrast level appears.
5) Press menu to confirm the contrast level setting.
6) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

8.3 Backlight adjustment

This command is for setting display and keypad backlight adjustment and auto-adjustment as follows:

1) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Lcd&Keypad`** option.
2) Press menu to view the sub-menus available.
3) Press the ▲ ▼ buttons until the **`Light`** (backlighting) sub-menu is highlighted. The display will show:
   - **`On`** – backlight always activated

English

- **`Auto`** – backlight is automatic - will activate as soon as you use any command, and will deactivate approximately 20 seconds after the last command is given.
- **`Off`** – backlight deactivated

4) Press the menu button repeatedly until the desired setting is selected.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

8.4 Exclusion of internal speaker

If your transceiver is connected to an (optional) external speaker, you may wish under some conditions to use only the external speaker, and exclude the internal one. To do this:

1) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Radio Param.`** option.
2) Press menu to view the sub-menus available.
3) Press the ▲ ▼ buttons until the **`Int.Spkr Off`** (deactivation of internal speaker) sub-menu is highlighted.
4) Press menu to insert the ✔ symbol beside the appropriate option. (In other words, so the internal speaker is deactivated.)
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen

To reactivate the internal speaker, follow the above procedure and, at Step 3, press menu to delete the ✔ symbol.

Do not disconnect the external speaker when the internal one is deactivated. You may damage the radio.

9 USE WITH CTCSS/DCS AND/OR SELECTIVE CALLS

9.1 Reception

In this operating mode, your radio is programmed so that the audio is activated only when receiving a correct CTCSS/DCS and/or selective call signal.

The audio will thus remain silent until you receive a correct CTCSS tone, a correct DCS code, and/or a valid selective call.

- *If a correct CTCSS/DCS signal is received, the status LED will light up in orange for the duration of signal reception, and the icon will appear on the display.*
- *If a valid selective calling signal is received, the status LED will flash orange and the icon will appear on the display.*

If a signal is received but does not contain the correct tone/code, the audio will remain deactivated and the LED will appear green.

Depending on the radio's programming, it may be possible to temporarily deactivate CTCSS/DCS and Selective call to monitor radio traffic (monitor function). For further details, refer to par. 6.6.

9.2 Transmission

9.2.a CTCSS/DCS Transmission

If your transceiver has been programmed to transmit a CTCSS tone or a DCS code, you don't have to do anything. The CTCSS tone or DCS code are automatically sent each time you transmit (the device will not show this status).

9.2.b Sending a selective call

Depending on the programming, your transceiver may be able to send up to four selective calls:

- **Call 1** – first selective call (fixed)
- **Call 2** – second selective call (fixed)
- **User** – variable selective call; the variable digits can be keyed into the MK06/35-K keypad microphone (refer to. par. 4.1.b).
- **Emergency** – selective call for emergencies (special call sent repeatedly, and defined during the programming phase).

Rapid send of selective calls

Your transceiver can be programmed to send certain selective calls using one or more of the **F1, F2, F3** and **F4/ESC** function keys or using the command menu. Also, the **Emergency** selective call can be activated via a suitable contact on the rear **Input/Output** socket. For further details, refer to Chapt. 13.

To emit a fixed selective call using the function keys:

1) *Ensure the channel is unoccupied* by checking that the status LED *is off* (or flashing orange).
2) Press the **F1, F2, F3** or **F4/ESC** key that corresponds to the call you wish to send. The call will be sent automatically, the status LED will be lit in red, and the display will simultaneously show the selective address corresponding to the button pressed.

*When you follow the operation outlined in step 2, the device will automatically go into transmission mode (status LED lit in red); therefore, you do not need to press the **PTT** transmission button on the hand-held microphone.*

Sending a fixed selective call from the menu

1) Ensure the channel is unoccupied by checking that the status LED

English

is off or flashing orange.

2) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **Calls** option.
3) Press menu to view the selective calls available:
   - **Call1** – fixed call 1
   - **Call2** – fixed call 2
   - **User Call** (variable selective call)
   - **Emergency** (emergency call)
4) Press the ▲ ▼ buttons until **Call 1** or **Call 2** is highlighted, then press menu to make the call. The device will automatically return to the standby screen.

9.2.c Sending a variable selective call

The selective variable is only available through the keypad microphone (mod. MK06/35-K).

If the channel has been programmed to emit a selective variable, a * symbol will appear on the bottom left of the display, followed by the predefined variable digits. A selective variable can be sent using two methods:

Emission via microphone

Key in the variable digits using the microphone keypad, then press the ***CALL** button on the microphone.

Emission via the menu

1) Key in the variable digits using the microphone keypad.
2) Follow steps 2 and 3 from the par. “Sending a fixed selective call from the menu”.
3) Press the ▲ ▼ buttons until **User Call** is highlighted, then press menu to make the call.

9.2.d Sending an emergency selective call

This is a special call that is sent repeatedly in cycles on a predefined channel based on the radio’s programming.

Use this emergency call only if you find yourself in a real condition of necessity which requires assistance. Speak to your radio network administrator about its use.

Your radio can be programmed to deactivate all other commands when it is making an emergency call.

*An emergency call can also be sent using the **Input/Output** connector.*

Emission via microphone

Hold down the **3EMG** button on the keypad microphone until the emergency selective call is emitted, then release.

Emission via the menu

1) Follow steps 1 and 3 from par. “Sending a fixed selective call from the menu”.
2) Press the ▲ ▼ buttons until **Emergency** (emergency call) is highlighted, then press menu to make the call.

10 ADVANCED FUNCTIONS

10.1 Channel scanning

This function is particularly helpful when multiple channels have been programmed. It allows you to follow radio traffic, as well as to respond to calls from different channels. When the radio picks up a valid signal during scanning, it pauses on that channel and communication is heard on the speaker. When the signal ends, scanning begins again automatically.

If CTCSS/DCS or selective calls have been previously programmed, the device can be programmed to pause only at incoming signals containing the appropriate signals.

10.1.a Activation of scanning

1) Press the (menu) button to access the command menu, then use the buttons to highlight the **Scan** option.
2) Press (menu) to view the available sub-menus.
3) Press the ( ) ( ) buttons until the **Scanning** sub-menu is highlighted.
4) Press (menu) to insert the ✓ symbol.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen. The ⇄ icon will appear on the display.

During scanning, the ( ) and ( ) buttons will not change the operating channel.

If you try to activate scanning using an empty scanning list, an error sound will be emitted and scanning will not start. Obviously, the list of scanning channels must include at least two channels.

*If you press the **PTT** transmission button during channel scanning, the radio will pause on a predetermined channel, chosen during the programming phase (this will be the priority channel or another predefined one), and will begin transmission. When you release the **PTT**, the scanning will begin again automatically.*

To stop the scanning, repeat the above procedure (at step 4, remove the ✓).

10.1.b Temporary exclusion of channels from scanning

You can temporarily exclude channels that are of no interest from the scanning list as follows:

1) If scanning pauses frequently on communications that are of no interest, press the (menu) to access the command menu, then press the ( ) or ( ) button until the **Scan** menu is highlighted on the display.
2) Press (menu) again to view the available sub-menus.
3) Select **Chan Del** (temporary removal of channel from scanning) using the ( ) ( ) keys, then press the (menu) button. The channel will be temporarily removed from the scanning list.

10.1.c Temporary pause in scanning

1) When scanning temporarily pauses on a communication of interest, press the (menu) button to access the command menu, then press the ( ) ( ) buttons until the **Scan** menu is highlighted on the display.
2) Press (menu) again to view the available sub-menus.
3) Press the ( ) ( ) buttons until the **Scan Esc** (temporary exit

from scanning) sub-menu is highlighted and press menu. Scanning will stop on the channel currently selected, and the standby icon will appear on the display.

To restart scanning, repeat the procedure outlined above.

If this command is used frequently, we suggest you program it into one of the function keys. Contact your radio network administrator for further details.

10.1.d Changing the channel scanning list

You can use this function to create a personalized scanning list and to set a priority channel that is different from the pre-programmed one.

1) Ensure that scanning *is not activated*.
2) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlighted the **Scan** option.
3) Press menu to view the available sub-menus.
4) Press the ▲ ▼ buttons until the **Edit List** sub-menu is highlighted. The first channel added to the scanning list will appear. Above the four function buttons, the following should also appear on the display:

padd	chadd	chdel	esc
F1	F2	F3	F4/ESC

5) Depending on what you would like to do, press the corresponding function button.

F2 Adding new channels to the list

1) Press the **F2** (**chadd**) function key. You will see the first channel that is not inserted in the scanning list.
2) Press the ▲ ▼ buttons until the channel you desire appears on the screen.
3) Press the menu button to memorize the channel in the scanning list.
4) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

F3 Deleting channels from the list

1) Press the ▲ ▼ buttons repeatedly until that channel you wish to delete from the scanning list has been selected.
2) Press the **F3** (**chdel**) function key to remove the channel from the scanning list.
3) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

F1 Changing the priority channel

1) Remove the current priority channel from the scanning list, following the procedure outlined above.
2) Remove the new channel that you wish to assign as the priority channel from the scanning list.
3) Press the **F1** (**padd**) function key. You will see the first channel that is not inserted into the scanning list.
4) Press the ▲ ▼ buttons until the channel you desire as priority appears on the screen.
5) Press the menu button twice to memorize the new priority channel and exit the scanning list.
6) If necessary, reinsert the old priority channel in the scanning list, following the procedure outlined above.
7) Exit the sub-menu by pressing the **F4/ESC** button, then press it

a second time to exit the main menu and return to the standby screen.

10.2 Rapid recall of home channel

This function allows you to quickly recall the channel most frequently used (home channel).

1) Press the menu button to access the command menu, then use the ▲▼ buttons to highlight the **Home Chan** option.
2) Press menu again to confirm the channel. ⌂ will appear on the display.

10.3 Locking microphone's keypad

If you use the MK06/35-K keypad microphone, you can lock its keypad in order to avoid sending accidental commands during use.

1) Press the menu button to access the command menu, then use the ▲▼ keys to highlight the **Lcd&Keypad** option.
2) Press menu again to view the available sub-menus.
3) Press the ▲▼ buttons repeatedly until the **Keypad Lock** sub-menu is highlighted.
4) Press menu to insert an 🔒. The device's keypad will be deactivated.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen. The 🔑 icon will appear on the display.

To reactivate the keypad, follow the procedure outlined above (at step 4, remove the 🔒).

✎ *When the keypad is locked, the **On/Off-Volume** knob, the microphone **PTT**, and some function keys will still remain active (depending on the device's programming).*

10.4 Signal reception attenuator

If you are in an area where radio signals are too strong (e.g., near a high-powered repeater or transmitter), you may find that these signals saturate your receiver, reducing performance. To avoid this situation, you can temporarily insert an internal signal attenuator as follows:

1) Press the menu button to access the command menu, then use the ▲▼ buttons to highlight the **Radio Param** option.
2) Press menu to view the available sub-menus.
3) Press the ▲▼ buttons repeatedly until the **Loc/Dist** (local/distant) sub-menu is highlighted. To its left, you will see a **D** (distant).
4) Press menu to select **L** (local).
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

✎ *In stand-by, the display will always show the current setting with the D (distant = attenuator deactivated) or L (local = attenuator activated) icon.*

✋ **As soon as conditions return to normal (e.g., you have moved to an area where signals are not as strong), do not forget to deactivate the attenator, otherwise you will not be able to receive weak signals.**

To deactivate the attenuator, follow the procedure outlined above, selecting **D** at step 4.

English

10.5 Talk Around

If you are operating with a repeater and it breaks down, you can use the Talk Around function to communicate with nearby stations by bypassing the repeater. To activate this function:

1) Select a semi-duplex channel (otherwise the Talk Around function cannot be activated)
2) Press the menu button to access the command menu, then use the ▲ ▼ buttons to highlight the **Radio Param** option.
3) Press menu to view the available sub-menus.
4) Press the ▲ ▼ buttons repeatedly until the **TlkAround** sub-menu is highlighted.
5) Press menu to insert the ✓ symbol. The Talk Around function is activated and the Ti icon will appear on the display when the device is in standby.
6) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

Do not forget to deactivate the Talk Around function when you have finished speaking with your receiving party, otherwise you will not be able to use the repeater when it has been fixed.

10.6 Confidential transmission (optional scrambler board)

Your transceiver may be equipped with an optional internal scrambler board. This is a device which makes your communication unintelligible by normal radio receivers/transceivers, but perfectly clear to other members of your radio network, who will be equipped with a compatible scrambler board.

To activate the scrambler:

1) Ensure your receiving party has activated their scrambler.
2) Press the menu button to access the commend menu, then use the ▲ ▼ buttons to highlight the **Radio Param** option.
3) Press menu to view the available sub-menus.
4) Press the ▲ ▼ buttons repeatedly until the **Scrambler** sub-menu is highlighted.
5) Press menu to insert the ✓ symbol. The scrambler function is activated, and the S icon will appear on the display when the device is in standby.
6) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

To deactivate the scrambler:

1) Ensure your receiving party has also deactivated their scrambler.
2) Follow the procedures outlined above. At step 5, remove the ✓ symbol.

10.7 Audio amplifier (PA function)

It is possible to use the transceiver's audio amplifier to drive an external speaker and amplify your voice. This provides you with a sort of "mobile megaphone", which can be used for special operations. To activate this function:

1) Press the menu button to access the command menu, then use the buttons to highlight the **Switches** option.
2) Press menu to view the available sub-menus.
3) Press the ▲ ▼ buttons repeatedly until the **PA** sub-menu is highlighted.

4) Press (menu) to insert the ✓ symbol. The audio amplifier will be activated, and the icon will appear on the display.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

At this point, each time you press the **PTT** transmission button, instead of transmitting, your voice transmission will be heard on the external speaker.

To reactivate normal radio functions, repeat the above procedure, removing the ✓ symbol in step 4.

Once you have finished using the PA, do not forget to reactivate your radio's normal functions.

A faulty connection to the external speaker may seriously damage the transceiver.

10.8 Auxiliary output

The rear **Input/Output** socket of the radio can control external devices that are activated/deactivated each time you turn your device on/off. To activate this function:

1) Press the (menu) button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Switches`** option.
2) Press (menu) to view the available sub-menus.
3) Press the ▲ ▼ buttons repeatedly until the **`Aux.Out`** sub-menu is highlighted.
4) Press (menu) to insert the ✓ symbol. The auxiliary output will be activated, and the icon will appear on the display when the device is in standby.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

To reactivate normal radio functions, follow the procedure outlined above.

A faulty connection to the Input/Output socket may seriously damage the transceiver.

10.9 External alarm

You can program your radio so that, each time you receive a valid selective call, external devices are activated (e.g., an acoustic alarm to advise you of an incoming call if you are away from your vehicle) using a suitable contact with the rear **Input/Output** socket on the radio. To activate this function:

1) Press the (menu) button to access the command menu, then use the ▲ ▼ buttons to highlight the **`Switches`** option.
2) Press (menu) to view the available sub-menus.
3) Press the ▲ ▼ buttons repeatedly until the **`Alarm`** (auxiliary output) sub-menu is highlighted.
4) Press (menu) to insert the ✓ symbol. The auxiliary output will be activated, and the icon will appear on the display when the device is in standby.
5) Exit the sub-menu by pressing the **F4/ESC** button, then press it a second time to exit the main menu and return to the standby screen.

A faulty connection to the Input/Output socket may seriously damage the transceiver.

English

11 CLEANING AND MAINTENANCE

Aside from the normal cleaning and connection efficiency check, your radio does not require any particular maintenance.

As with all electrical devices, your radio requires periodic laboratory testing, otherwise its performance cannot be guaranteed. For further details, contact your radio network administrator or CTE International technical office.

11.1.a Cleaning the radio

Carefully polish the radio using a soft, clean cloth that does not have loose fibers. If the radio is very dirty, slightly dampen the cloth in a solution of 90% water and 10% neutral soap.

Do not use liquid detergents, sprays, alcohol, solvents, or abrasives.

11.1.b Connectors

During cleaning, be careful not to damage, dampen, or scratch the connectors.

Attach your radio connectors only to approved accessories. For further details, contact your authorized dealer.

12 OPTIONAL ACCESSORIES

Optional accessories can be used to expand the range of functions available with your radio. We are constantly developing new options for you, and are pleased to list below the accessories we currently offer:

- **MK06/35 standard microphone** – microphone for general use, with **PTT** transmission button.
- **MK06/35-K keypad microphone** – along with the standard microphone functions, it allows the user to make variable selective calls (if activated during the programming phase).
- **Microphone with base** – microphone with stand-alone base
- **220VAC/13.8Vdc stabilized power supply** – for using the transceiver as a base station (properly connected to an external antenna).
- **Kit for detachable front panel** – includes a connection cable from the front panel to the radio body, as well as the bracket and hardware to mount the front panel.

English

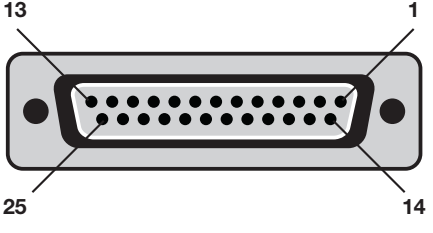
13 CONNECTIONS

13.1 Input/Output rear connector

The following table outlines the connections from the rear **Input/Output** (DB25) connector:

N.	Signal name	Notes
1	AUX OUT	
2	-	Not connected
3	EXT SPEAKER	
4	FLAT UN-SQ RX AUDIO	
5	DE-EMPH-SQ RX AUDIO	
6	RX MUTE INPUT	
7	TX AF IN	
8	PTT OUTPUT	
9	EXTERNAL PTT	
10	SELCAL VALID	
11	RSSI LEVEL	
12	CDS SIGNAL	
13	HANG UP	
14	GND	Grounded
15	GND	Grounded
16	EXT SPEAKER +	
17	Spare 2	Additional contact for special use
18	Spare 1	Additional contact for special use
19	Output 12V 100 mA max.	
20	Backlight control input	
21	INPUT/OUTPUT 2	
22	INPUT/OUTPUT 1	
23	External alarm input	
24	Emergency switch - input	
25	Ignition sense input	

Faulty connections may seriously damage your radio. Before connecting any device, consult the service manual and your CTE International technical office.



14 TECHNICAL SPECIFICATIONS

14.1 Test methods

- ETS 300-086 / ETS 300-113 (optional “modem board”)
- IEC 529 IP54 and MIL STD 810 C/D/E

English

14.2 Specifications table

General			
Characteristic	**Units**	**Value/Measurements conditions**	
Frequency	MHz	from 136 to 174	
Operating Band	MHz	38	
Number of Programmable Channels	-	up to 100	
Channel Spacing	KHz	12.5 / 20 / 25	
Frequency Steps	KHz	5 / 6.25	
Rated Power Supply	Vdc	13.8	
Current drain	A	Stand-by	0.4 (or less)
		RX	0.6 @ the maximum AF power
		TX	5 (@ 25 W) / 3.5 (@ 10 W) / 2.4 (@ 4 W)
Antenna Impedance	Ohm	50	
Speaker Impedance	Ohm	8	
Frequency Stability	ppm	±5	
Operating Temperature Range	°C	from –25 to +55	
Relative Humidity	%	90 (non condensing)	

Transmitter			
Output Power (±1 dB)	W	10 / 25 (depending on the version)	
Spurious Emissions	µW	from 9 KHz to 1 GHz	< -36 dBm
		from 1 to 4 GHz	< -30 dBm
Modulation System	-	FM (F3E) / PM (G3E)	
Maximum Deviation	KHz	± 2.5 (@ 12.5 KHz) / ±5 (@ 25 KHz)	
Adjacent Channel Power Attenuation	dB	< -60 (@ 12.5 KHz) / -70 (@ 20-25 KHz)	
Receiver			
Configuration		Double Conversion Superetherodyne	
Sensitivity (at 12 dB SINAD)	µV	< 0.3	
Squelch Sensitivity (SINAD)	µV	0.25 with 3 dB hysteresis	
Selectivity (Adjacent Channel)	dB	At least -60 (@ 12,5 KHz) / -70 (@ 25 KHz)	
Spurious Response Rejection	dB	> 70	
Intermodulation	dB	> 65	
Audio Output (1 KHz at 5% T.H.D.)	W	4 (built-in internal speaker) / 10 (external audio output)	
Mechanical Specifications			
Type of construction	-	Metallic cabinet with detachable front panel	
Size	mm	180x57x28 with front panel / 174x48x150 main unit only	
Weight	Kg	1.4	
Microphone connector	-	RJ	
Rear I/O connector	-	25-pins DB type	
Shock resistance	-	Meets MIL STD 810 specifications	
Moisture & Dust Resistance	-	According to the IEC529 and IP54 regulations	